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MORAGHAN, JOHN T.\*, and K. HORSAGER. Dept. of Soil Science, North Dakota State University, Fargo, ND 58105. Nitrogen fertilizer experiments with sugarbeet in the Red River Valley.

Sugarbeet, Beta vulgaris L., is grown under dryland conditions in the Red River Valley, a region of limited and erratic growing-season precipitation. The success of the industry is dependent upon sugarbeet's deep rooting system and the storage of up to 10 to 12 inches of available soil water in the rooting zone. Twenty four nitrogen fertilizer experiments were conducted in the region between 1985 and 1990 on soils with various levels of soil nitrate-N in the rooting zone. Important findings from this research included: (1) high levels of soil nitrate-N within the rooting zone, in general, had a more detrimental effect on sugar yields and root quality than comparable levels of fertilizer N placed in the topsoil; (2) approximately 75-90 pounds of soil nitrate-N or fertilizer N at certain yield levels needed to be present in the upper 2 feet of soil to insure optimal early-season growth and optimal sugar yields; (3) return of sugarbeet tops resulted in the addition of approximately 50 to 200 pounds of organic N to the soil; (4) sugarbeets were very effective at removing soil nitrate-N from the rooting zone; (5) relatively low levels of petiole nitrate-N can be present from late July on without affecting adversely sugar yields; and (6) recovery of fertilizer N in tops and storage roots was generally less than 50% of the applied quantity.

KNUDSEN, THOMAS D.\* MINN-DAK FARMERS COOPERATIVE, 7525 Red River Road, Wahpeton, North Dakota, 58075. The Use of Satellite Technology For Grower Information Dissemination.

The need for instant access to information is common in today's highly technological society. The sugarbeet grower also requires a much more up to date and timely information source on how to not only produce the best possible crop, but is keenly interested in the day to day operation of the company. This has been accomplished in the past through use of mobile telephones, company newsletters, mailings and commercial radio broadcasts. While the aforementioned sources did improve management-producer communication, there still existed a gap that needed to be filled. This has been partially accomplished at Minn-Dak Farmers Cooperative through the use of satellite technology. Information is generated at a computer terminal at the main office and sent via a phone modem to Omaha, Nebraska, where it is encrypted and sent via modem to a satellite uplink station in Chicago, Illinois. From there the information is downlinked to a grower's satellite receiver and is displayed on his monitor in a matter of minutes. There are three pages of information available and the Cooperative controls access to the Minn-Dak segment. A brief rundown of some of the topics generated would include crop progress, Cercospora advisories, soil and root temperatures, harvest schedules and progress, factory process and hauling schedules and upcoming informational meetings. This information is only part of a market information package offered by the Data Transmission Network of Omaha, Nebraska. This system has been in use at the Cooperative since September of 1989. Currently 75% of the Cooperative's acreage has access to the information. This information can be updated 24 hours a day, seven days a week. Potential use of this system is only limited by one's imagination.